

10/721,691

Amendments to the Claims

Claim 1 (Currently Amended). A suturing apparatus, comprising:

a body;

a J-shaped needle, the needle having a proximal end and a distal end, the proximal end of the needle attached to the body and having a first central axis portion located within the proximal end of the needle, wherein

the proximal end of the needle is attached to the body and comprises an elongated, straight portion of the J-shape, a first central axis is located within the proximal end of the needle,

the distal end of the needle having a needle tip comprising a tapered needle tip capable of penetrating tissue and having at least one passage to hold suture material, the needle tip having a tapered portion; the tapered portion of the needle tip having a center line comprising the centroids of adjacent selected planar cross-sections of the tapered portion, each selected planar cross-section selected for having the smallest area of a smaller area than each proximally located planar cross-section having the same centroid as the selected planar cross-section, the distal end of the needle formed so that at least a first line is tangent to the center line forming an acute angle with the and the first central axis portion;

a movable arm, the movable arm having a proximal end and a distal end,

the proximal end of the movable arm pivotally movably attached to the body,

the distal end of the movable arm operable to contact at least a portion of the needle tip consisting of a needle tip protector and pivoting from a closed position wherein the needle tip protector contacts the needle tip to an open position wherein the movable arm pivots toward the straight elongated portion of the J-shape and no longer contacts the needle tip; and

a movable part actuator, the movable part actuator operable to move the movable arm between the an open position and the a closed position the closed position occurring when the distal end of the movable arm contacts at least a portion of the needle tip, the open position occurring when the distal end of the movable arm does not contact the needle tip.

Claim 2 (Canceled)

Claim 3 (Canceled)

Claim 4 (Canceled)

Claim 5 (Canceled)

Claim 6 (Original). A suturing apparatus as claimed in claim 1, wherein the movable arm actuator comprises a compression member, the compression member disposed within the body, the compression member operable to urge the movable arm to the open position.

Claim 7 (Original). A suturing apparatus as claimed in claim 6, wherein the compression member is a spring.

Claim 8 (Original). A suturing apparatus as claimed in claim 1, wherein the apparatus comprises materials capable of tolerating autoclave sterilization.

Claim 9 (Original). A suturing apparatus as claimed in claim 1, further comprising a first handle and a second handle, the first handle and the second handle attached to the opposite sides of the body.

Claim 10 (Previously Amended). A suturing apparatus as claimed in claim 1, further comprising a first depression and a second depression, the first depression and the second depression disposed upon opposite sides of the body in locations where they may accept an operator's fingers while the operator is placing the sutures.

Claim 11 (Previously Amended). A suturing apparatus as claimed in claim 1, further comprising a first depression and a second depression, the first depression and the second depression disposed upon the underside of the body in locations where they may accept an operator's fingers while the operator is placing the sutures.

Claim 12 (Currently Amended) A suturing apparatus as claimed in claim 1, wherein the apparatus is configured optimized for left-handed use.

Claim 13 (Currently Amended) A suturing apparatus, comprising:

a body;

a hook shaped needle, the needle having a proximal end and a distal end, wherein

the proximal end of the needle is attached to the body, the distal end of the needle curved to form a hook, the distal end of the needle having means for penetrating tissue, the distal end of the needle having means for holding suture material; and comprising an elongated, straight portion of the hook shape, a first central axis is located within the proximal end of the needle,

the distal end of the needle comprising a tapered needle tip capable of penetrating tissue and having at least one passage to hold suture material, the tapered portion of the needle tip having a center line comprising the centroids of adjacent selected planar cross-sections of the tapered portion, each selected planar cross-section selected for having a smaller area than each proximally located planar cross-section having the same centroid

as the selected planar cross-section, the distal end of the needle formed so that at least a first line is tangent to the center line and the first central axis portion;

a movable arm, the movable arm having a proximal end and a distal end,
the proximal end of the movable arm pivotally mounted within attached to the body,

the distal end of the movable arm having means to cover at least a portion of the needle tip consisting of a needle tip protector and pivoting from a closed position wherein the needle tip protector contacts the needle tip to an open position wherein the movable arm pivots toward the straight elongated portion of the hook-shape and no longer contacts the needle tip; and

a movable arm actuator, the movable arm actuator operable to move the movable arm between the an open position and the a closed position; the closed occurring when the distal end of the movable arm covers at least a portion of the needle tip; the open position occurring when the distal end of the movable arm does not contact the needle tip; the movable arm actuator and comprising a compression member; the compression member disposed within the body,

the compression member operable to urge the movable arm to the open position

Claim 14 (Original). A suturing apparatus as claimed in claim 13, wherein the apparatus comprises materials capable of tolerating autoclave sterilization.

Claim 15. (Currently Amended). A suturing apparatus as claimed in claim 13, wherein the apparatus is configured for left hand use

Claim 16 (Original). A suturing apparatus as claimed in claim 13, further comprising a first handle and a second handle, the first handle and the second handle attached to opposite sides of the body.

Claim 17 (Original). A suturing apparatus as claimed in claim 13, further comprising a first depression and a second depression, the first depression and the second depression disposed upon opposite sides of the body.

Claim 18 (Original). A suturing apparatus as claimed in claim 13, further comprising a first depression and a second depression, the first depression and the second depression disposed upon the underside of the body.

Claim 19 (Canceled)

the tip 133 may angle toward, away from, or to either side of the shaft 131, with the moveable arm 140 shaped and oriented correspondingly to allow the tip protector 141 to mate smoothly with the tip 133. Both the needle shaft 131 and the tip protector 141 may also employ any angle, curve, or combination of angles and curves needed to allow the apparatus to reach any potential location for a suture. In this embodiment the needle 130 and moveable arm 140 have circular cross-sections, but any cross-sectional shape may be employed as desired. A hole 135 for suture material is bored radially through the needle a short distance below the base of the tip 133. The needle preferably comprises a proximal end and a distal end, the proximal end of the needle attached to the body and having a first central axis portion located within the proximal end of the needle, the distal end of the needle having a needle tip capable of penetrating tissue and having at least one passage to hold suture material, the tapered portion of the needle tip having a center line comprising the centroids of adjacent selected planar cross-sections of the tapered portion, each selected planar cross-section selected for having a smaller area than each proximally located planar cross-section having the same centroid as the selected planar cross-section, the distal end of the needle formed so that at least a first line is tangent to the center line and the first central axis portion

[0022] In this preferred embodiment, the needle 130, moveable arm 140, and screws 104, 108, 122 are made of stainless steel, although other corrosion-resistant materials may be used. Other metal parts are preferentially stainless steel, and non-metal parts are preferentially TEFLON®. In alternate embodiments, non-metal parts may be plastic or ceramic. The present invention may be designed for single or repeated use. Embodiments intended for repeated use must be sterilized between uses, so materials that will tolerate sterilizing agents, solvents, or autoclave temperatures are preferred.

[0023] The body 100 described in this preferred embodiment is drilled, milled, and turned from a single block of TEFLON®, but in other embodiments the body may be assembled, cast, injection-molded, or formed by other techniques well-known in the art.